

WHAT IS CLAIMED IS:

1. A duplexer comprising:
a transmitting filter and a receiving filter which are connected in parallel to an antenna terminal; and
a matching circuit provided between the antenna terminal and at least one of the transmitting filter and the receiving filter,
wherein a portion of the matching circuit defines a trap circuit for harmonic suppression.
2. A duplexer according to claim 1, wherein the trap circuit includes at least one open stub corresponding to a harmonic to be suppressed.
3. A duplexer according to claim 2, wherein the matching circuit includes a parallel inductor connected between the antenna terminal and a ground.
4. A duplexer according to claim 3, wherein, in a passband of the transmitting filter and the receiving filter, the open stub is capacitive and the combined reactance of the open stub and the parallel inductor is capacitive.
5. A duplexer according to claim 3, wherein the parallel inductor has a Q factor of at least about 20.
6. A duplexer according to claim 1, wherein the matching circuit includes a first parallel capacitor connected to the antenna terminal, a series inductor, and a second parallel capacitor, and the first parallel capacitor includes the trap circuit.
7. A duplexer according to claim 1, further comprising:
at least one package for housing at least one of the transmitting filter and the receiving filter; and

a multi-layer substrate having the package and a portion of the matching circuit mounted thereon.

8. A duplexer according to claim 7, wherein the trap circuit is provided in the multi-layer substrate.

9. A duplexer according to claim 7, wherein the parallel inductor of the matching circuit includes a chip coil.

10. A duplexer according to claim 7, wherein the parallel inductor of the matching circuit includes a short stub which is provided in the multi-layer substrate.

11. A duplexer according to claim 1, further comprising a package for housing the transmitting filter and the receiving filter, wherein the package also houses the matching circuit.

12. A duplexer according to claim 10, wherein the parallel inductor of the matching circuit includes a spiral microstrip line.

13. A duplexer according to claim 1, wherein each of the transmitting filter and the receiving filter includes a surface acoustic wave filter.

14. A duplexer according to claim 1, wherein the transmitting filter includes a ladder-type SAW filter having a first series SAW resonator connected to the antenna side.

15. A duplexer according to claim 3, wherein the parallel inductor is a wound-type chip coil.

16. A duplexer according to claim 14, wherein the ladder-type SAW filter is a T-shaped ladder SAW filter.

17. A communication apparatus comprising the duplexer according to claim 1.